

## Flight Report – SEAC4RS ER-2, August 21, 2013 (Science flight #5)

Prepared by: Eric Jensen (eric.j.jensen@nasa.gov)

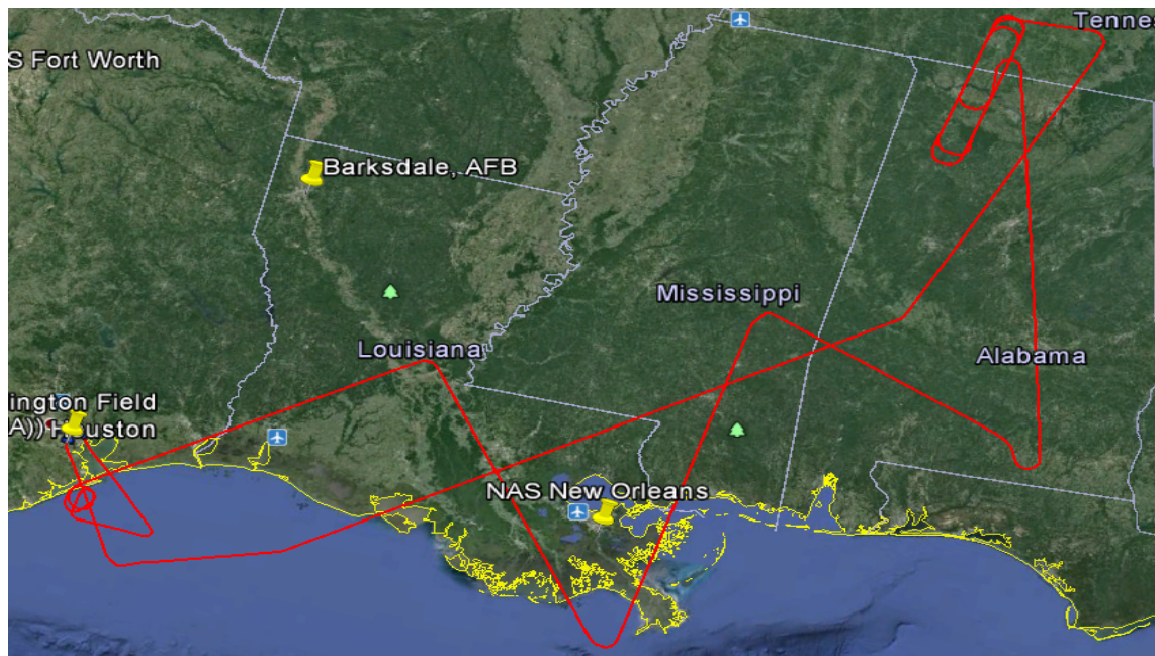
Purposes of flight: Sampling tracers in fresh (<1 day old) detrainment from deep convection, remote-sensing support for DC-8 and Learjet sampling of convection and anvil cirrus, and remote-sensing of clouds coordinated with the CloudSat/CALIPSO overpass.

Take-off: 10:10 local (Central DST) (UTC start = 15:10, UTC end = 22:26)

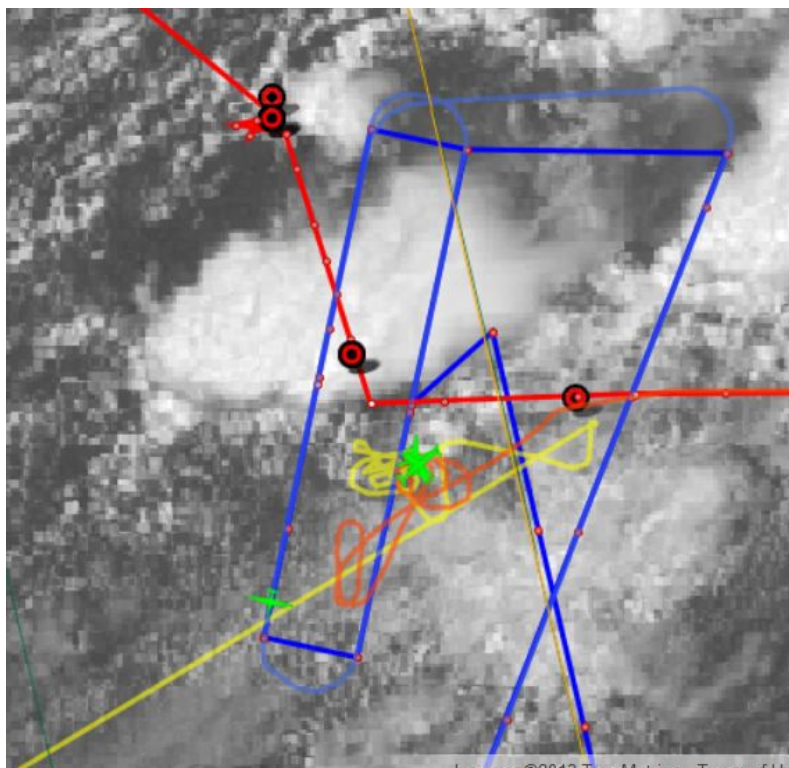
Duration: 7.3 hrs

Notes: Before takeoff, the first two dips were repositioned to optimize sampling of recent convective outflow. These dips reached their lowest altitudes (43 kft) over southern Louisiana and Mississippi. Next, the aircraft overflowed Huntsville for comparison with ground-based radar measurements and an Aeronet site. The racetrack pattern west of Huntsville turned out to be ideally positioned over a convective system with a mature anvil. Three orbits over this convective system were flown, with the DC-8 and Learjet sampling clouds near the southern end of the racetrack pattern. After exiting the racetrack pattern, the ER-2 flew along the CALIPSO track coordinated with the overpass at about 19:10 UTC while the Learjet was sampling shallow cumulus below (see Figure below). Thin cirrus was present along this flight leg. The last stage of the flight included two additional profiles over southern Mississippi where convective detrainment at high altitude was expected. The first dip went down to 45 kft, and the second was limited to 50 kft by convection below. The aircraft ascended to maximum altitude (~66 kft), and an MMS maneuver was conducted at 51 kft before final descent into EFD.

Communication of flight plan changes and coordination with the other SEAC4RS aircraft worked extremely well on this flight. AirMISPI had a problem during startup and did not collect data for this flight. The problem with contamination of the HUPCRS CO<sub>2</sub> measurement persisted.



**Figure 1:** ER-2 flight track.



**Figure 2:** ER-2 (blue), DC-8 (orange), and Learjet (yellow) flight tracks over/in/around convective system with an anvil extending to the northeast.